

Mechanization and Computerization in Road Transport Industry: Study for Vehicular Ledger

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Abstract: - Efficient road transport is a complex subject and needs critical examination in order to have a fair idea of the subject. However, the important role of cargo transport by road plays in the development of the economy of a nation. Developing nation like India, road transport is like to arteries of the giant body of industrial, agricultural and trading complex. Economic of transportation system is consisting by speedy movement, lesser loss or damage in transit. Lesser transit insurance cost of end transportation, deterioration in transit, detention at check post, costly finance, fuel price and heavy taxation.

In terms of, mechanization and computerization, at present handling of cargo is done manually and all records and accounts are also maintained by man power. This indirectly increases the cost of transportation to a considerable extent. Resorting to mechanization for handling of cargo and computerization for records and accounts will go away in contributing to the economics of road transport.

Key words: Efficient transport, Loading Sheet, Movement of Goods, Vehicular ledger etc.

2. Introduction:

More than 20 lacks of commercial vehicles are registered in our country like India, out of which 87% belongs to persons who own 1 to 5 vehicles and know n's as small scale operations and the balance owned by fleet operators engaged in transportation trading business.

However, the performance of truck driver which is depending from efficient transportation system, i.e. speedy movement, working hours of drivers; Rush Driving; Overloading etc. Therefore, the efficient transportation system is necessarily of an economic cycle of production, distribution and consumption.

3. Literature Review:

Economic of Road Transport is a complex subject and needs critical examination, in order to have a fair idea of the subject and in this regard have to mention some general observation about the important role the cargo transport by road plays in the development of the economy of a nation.

The Efficient road transports as well as individual mobility along with buses are necessary in an economic cycle of production, distribution and consumption. Common application areas by computer in road transports industries are:

- [3.1]. Statement of Consignment Notes (Sales),
- [3.2]. Statement of Lorry wise challan (purchase),
- [3.3]. Costing Statement,
- [3.4]. Party wise business statement,
- [3.5]. Outstanding Statement,
- [3.6]. Other MIS and misc reports etc.

However, paper in road transport industry, is very high and it is very difficult to keep records of accomplishment of all important facts:

- [3.7.] Movement of Vehicle,
- [3.8.] Movement of Goods,
- [3.9.] Cost per trip,
- [3.10.] Booking Register,
- [3.11.] Loading sheet,
- [3.12.] Trip Operational Sheet,

- [3.14.] Vehicle Operational Statement,
- [3.15.] Tyre Records,
- [3.16.] Monthly Operational Performance Statement, etc.

Movement of vehicle, it gives the details

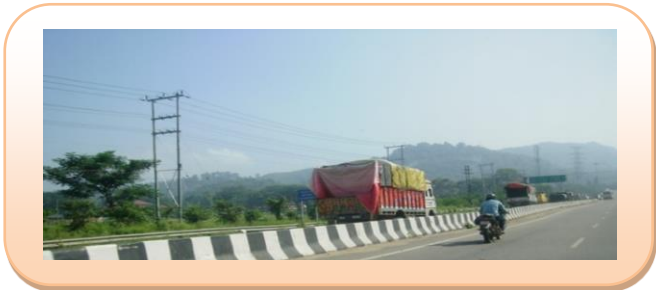


Fig: 3(a) Movement of Vehicle.

of Trucks hired with amount to be paid out to the lorry owner. If lists out all the consignment notes that have gone in the lorry and shows the originating and terminating city.

Movements of Goods, is consisting by all goods consignment notes to be sorted out code wise, destination wise; Record details of the truck, i.e. engine number, chassis number, driving license no, owner address etc.

Cost per Trip, it is most important for the road transport organization and the vehicle owner.



Fig: 3(b) Tool Gate in Assam, (N.H. 37)

Loading sheet, it is a major function for road transport and the following factors are usually taken into consideration.



Fig: 3(c) Vehicle Overloading

Trip operational Sheet (TOS) is consisting by: the distance between stations; the number of days taken for the journey and the loading and unloading etc Tyre Record, the cost of tyres has increased enormously in recent years and has a Major cost factor. It is therefore, essential to maintain records of the tyre that are fitted to a vehicle.



Fig: 3(d) Tyre

Monthly Operational Performance Statement, the Performance of the vehicle during a month is reported to the management by the help of MOSP. The actual working of the vehicle is tabulated in the MOSP and compared with the statement that has been laid down for its performance. The variations in the performance are noted and reasons for them giving.

Monthly Operational Performance Statement			
Truck No....	Driver.....	Month.....	
Distance	Standard	Actual	Variance
Lubricating.....			
Minor Repairs			
Misc. accessories			
Loading/Unloading			
Fines /Way Expense			
Salary			
Reason for Variance			
Report on Drivers Performance			
			Freman

Fig: 3(e) Monthly Operational Statement.

The management's attention is specially invited to those cases in which the performance is much below par, so that a timely and corrective action may be taken immediately. The format is given

From the above, for the faster information, i.e. computer application in road transport organization may reduce to cost and take care of volume of data.

4. Methodology:

In terms of mechanization and computerization in road transport organization have been computerized towards the different areas of their operational to get better and faster information as well as control and to reduce the cost and to take care of volume of data. Vehicle ledger that the data are available from the Trip Operational Sheet (TOS) are posted in a ledger called Vehicle Ledger

Vehicle Operational Statement	
Truck No.....	Drivers Name.....
Trip No.....	
Distance	
From	Date
To	
Running Day	
Idle Day	Duration
Qty	
Amount	Diesel
Major	
Minor	
Misc accessories	
Loading/Unloading	
Commission & Govt. Expenses	
Salary	
Municipal Charges	
Total Charges	
Total Lorry Hire	
Gross profit	
Tax Paid	
Balance	

Fig: 4(a) Vehicle Ledger

The trip is indicated by means of the trip number, which is the TOS number. Additional columns are provided for gross profit before vehicle tax, depreciation and tyre

5. Result and Discussion:

The vehicle ledger is an important document towards control the truck performance. Because all records were available computerized vehicle ledger, which for a proper management of vehicle certain basic information is necessary; this is made available from the records that are maintained in the office.

In term of effect on operation, the standards set for a vehicle are to be achieved over a period of time, when these standards are achieved the resultant effect is:

- [5.1.] Coverage of more distance,
- [5.2.] Control of fuel consumption,
- [5.3.] Control the repairing,
- [5.4.] Proper maintenance of vehicle,
- [5.5.] Awareness among the staff of their duties and responsibilities, etc.

In terms of control of repairing, in general for vehicle, the major problems that **clutch plate juddering and dragging**.

5.6. **Aim:** Problem in Clutch Plate Juddering:

5.6.1. Engine No. 697 DI 21 B VQ 1 03406.

5.6.2. Chassis No.357 SP 21 F VQ 7 33476.

5.6.3. Complain Reported: Clutch Plate Juddering.

5.6.4. Kms: 17,425 kms.

5.6.5. Observation:

Clutch plate free play: Found OK at 30 mm.

Clutch Disc: Oil soaked in the clutch facing both side.

Assy. Clutch Disc: Make – Gujarat Selco.

Pressure Plate (make clutch auto): Machine surface of the pressure plate has been found OK.

Oil seal ring: Contact at the lip of the oil seal was found uniform (make – swastika) and presumed that oil seal spring not holding rigidly on propeller shaft and oil seepage through the oil seal. Etc.

Corrective action Taken:

Fitted new assy. Clutch Disc and Gear box front and with top oil seal cover and found OK.

From the above, the advantage of the clutch is that the normal force acting on the contact surfaces and in this case a large than the axial force , as compared to the single plate clutch in which the normal force acting on the contact surfaces is equal to the axial force.

Refereeing the above problems, consider an elementary ring of radius r with radial width dr and which parallel to conical surface is dw.

The area of this ring:

$$= 2\pi r dw.$$

$$= 2\pi r \frac{dr}{\sin\theta}$$

$$\text{Normal load on ring } dp = p \cdot 2\pi r \frac{dr}{\sin\theta}$$

$$\text{Axial load on ring } dw = dp \sin\theta \\ = p \cdot 2\pi r dr$$

$$\text{Total axial load } W = \int_{r_2}^{r_1} p \cdot 2\pi r dr \\ = \int_{r_2}^{r_1} 2\pi C dr \\ = 2\pi C (r_1 - r_2)$$

Total torque about the axis,

$$\begin{aligned}
 &= \int_{r_2}^{r_1} u \, dp \cdot r \\
 &= \int_{r_2}^{r_1} \mu p \cdot 2\pi r^2 \frac{dr}{\sin\theta} \\
 &= \frac{2\mu\pi}{\sin\theta} \int_{r_2}^{r_1} p r^2 \cdot dr \\
 &= \frac{2\mu\pi}{\sin\theta} \int_{r_2}^{r_1} r \cdot dr \\
 &= \frac{\pi\mu C}{\sin\theta} (r_1^2 - r_2^2) \\
 &= \boxed{\frac{\mu(r_1 + r_2)W}{2 \sin\theta}}
 \end{aligned}$$

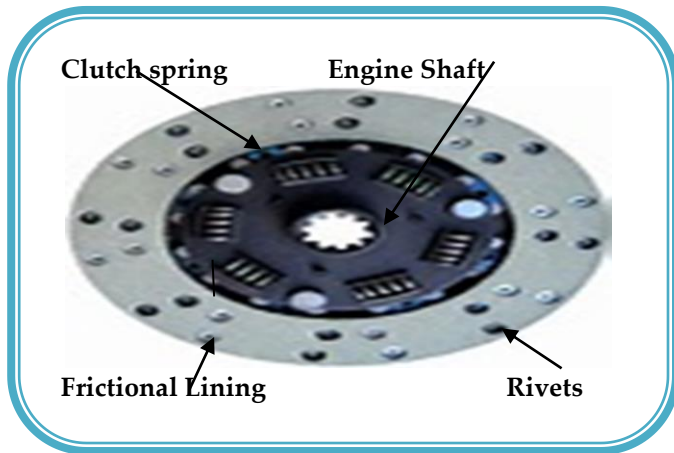


Fig: 5(a) Clutch Plate.

6. Type of Data:

Computer Application in Road Transport Organization as follows:

The size of an organization of a transport company naturally depends upon the volume of traffic and the scale of its operation such as network of its branch and its fleet strength. Common application (Computer) areas in Road Transport industry, the following:

6.1. Statement of Consignment Notes (Sales):

This gives the statement would ready information about each sale giving details such as customer name, value of business and shows the originating as well as terminating city.

6.2. Statement of Lorry –wise challan (Purchase):

This gives the details of Lorries hired with amount, to be paid out to the lorry Owners and lists out towards consignment notes that have gone along with Lorry and shows the originating and terminating city.

6.3. Costing Statement:

This statement is prepared Lorry wise to find out profit from each trip. All sales and rebates are picked up from consignment notes and expenses from the challan.

This statement has to prepare in the following additional sequence:

6.3.1. Customer wise.

6.3.2. City wise – To highlight profitable routes.

6.3.3. Lorry owner wise- To highlight source of Lorries which are more reliable and profitable, etc.

6.4. Party Wise Business Statement:

This helps to bring to management's attention of any party, where the business has been started falling, Business in current month, year-to-date and business in previous year could be printed; Profit from the each customer could be compared.

6.5. Outstanding statement:

This show all outstanding invoices and management's attention focusing on large outstanding and old outstanding, which is possible to reduce the same substantially. In one organization outstanding was reduced by 10%, within one year of implementation of this system and therefore, saving interest giving an opportunity to expand the business due to availability of funds.

6.6. Other MIS and misc reports:

Some of the other information that can be available to the management to take corrective operations and profitability's are:

6.6.1. Missing serial number of consignment notes and challan.

6.6.2. Destination wise pending Lorry hire challan.

6.6.3. Destination wise outstanding list of consignment notes.

6.6.4. Station to station costs for full load time of the journey, etc.

7. Additional Approach:

In the view of the observation, regarding the economics of road transportation of cargo, while considering the economics of cargo road transport, bare freight is not the only criteria, rather various others factors have their influence on the economics of this transportation system.

However, paper works in road transport industry is high and therefore, the following factors are important to keep records:

[7.1.] **Speedy Movement:** So far inland transportation is concerned; perhaps road transportation is the speediest at its cost. Time means value. Speedy transport a good deal is saved by way of lesser material inventory at dispatching points.

[7.2.] **Heavy Taxation:** In India, the taxation on road transport is the highest. Today, the revenue to the national exchequer from the road transport is more than 10000 cores and whenever Central and state Governments thinks of imposing any tax, they immediately find the road transport an easy prey to augment their revenue and as per study it was found that

taxation on this mode of transport will be considerably reduced contributing to the economy of this mode of transportation.

[7.3.] Due to bad condition and paucity of road, a lot of maintenance cost is incurred and if roads are properly maintained and expenditure on the road is increased to a required level, the economy of road transport will be strengthened to a considerable extent.

8. Conclusion:

Trip Operational Sheet is an important list, for the vehicle Ledger, as example the columns are provided for a short report on the repairs carried out during a trip and indicates the reasons for delay, repairs, consumption of extra fuel etc.

The above discussion, without the halfly report, vehicle ledger may problem or single consignment. When we consider all modes transportation, their impact on the economy and other factors governing day to day of our people. A half Yearly report of all vehicles on the distance covered in six months, he profits made during the period, and the total repairing charges paid is submitted to the management to enable it, to review the utility of each vehicle and decide whether to overhaul/keep it or dispose it off and format below:

Half yearly Report on the maintenance of the Vehicles						
Truck No	Distance covered during the 6 months	Profit during repairs	Major repairs during the 6 periods	Minor repairs during the 6 periods	Total	Remarks
Make Value Book Value						

However, when we consider all modes transportation their impact on the economy and other factors governing day to day life of our people, the latest theory perhaps will be the Multi-mix model of transportation together for transportation of a single consignment.

Therefore, the above discussion, Mechanization and Computerization in Road Transport Industry in India, have to take young entrepreneur in terms of management tools and may improves their operations.

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